

REMARKS

Claim Objections

Claims 1-45 are objected to under 35 U.S.C. §112 because of informalities in independent claims. The Office Action advises that “unmanned aerial vehicle (UAV)” should be used instead of the abbreviation, “UAV.” Applicants have accordingly amended independent claims 1, 8, 16, 23, 31, and 38 to include the suggested language. Applicants respectfully submit that the present amendments of claims 1, 8, 16, 23, 31, and 38, do not introduce any new matter into the present application and that the amendments cure the objections to claims 1-45. Applicants therefore respectfully request reconsideration of claims 1-45.

Claims 1, 8, 16, 23, 31, And 38 Are Rejected Under 35 U.S.C. §112, First Paragraph

Claims 1, 8, 16, 23, 31, and 38 are rejected as failing to comply with the written description requirement of 35 U.S.C. §112, first paragraph. The Office Action at page 2 states:

The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. That descriptions are: how to “identifying light control instructions for flying the UAV on the heading” (see Fig. 4 ref. 418), “means for identifying flight control instructions for flying the UAV on the heading” (i.e., what are these “means for” that the applicants claim?), “means for transmitting uplink telemetry” (a very low level block of “transmitting uplink telemetry” in Figure 4 ref. 420, or Fig. 12, ref. 406 is not descriptive for a claimed feature of “means for transmitting uplink telemetry” — the questions for what/when/where/how/why about this “means” must be disclosed).

That is, the Office Action asserts that the elements “identifying flight control instructions for flying the UAV on the heading,” “means for identifying flight control instructions for flying the UAV on the heading,” and “means for transmitting uplink telemetry” are not described in the specification in compliance with 35 U.S.C. § 112, first paragraph.

Applicants respectfully note that Applicants' written description is presumed to be adequate as set forth in MPEP 2163 III.A, which states:

A description as filed is presumed to be adequate, unless or until sufficient evidence or reasoning to the contrary has been presented by the examiner to rebut the presumption. See, e.g., *In re Marzocchi*, 439 F.2d 220, 224, 169 USPQ 367, 370 (CCPA 1971). The examiner, therefore, must have a reasonable basis to challenge the adequacy of the written description. The examiner has the initial burden of presenting by a preponderance of evidence why a person skilled in the art would not recognize in an applicant's disclosure a description of the invention defined by the claims. *Wertheim*, 541 F.2d at 263, 191 USPQ at 97. In rejecting a claim, the examiner must set forth express findings of fact regarding the above analysis which support the lack of written description conclusion. These findings should:

(A) Identify the claim limitation at issue; and

(B) Establish a prima facie case by providing reasons why a person skilled in the art at the time the application was filed would not have recognized that the inventor was in possession of the invention as claimed in view of the disclosure of the application as filed. A general allegation of "unpredictability in the art" is not a sufficient reason to support a rejection for lack of adequate written description.

The Office Action has not overcome the presumption that Applicants' written description is adequate because the Office Action has failed to establish a prima case by providing reasons why a person skilled in the art at the time the application was filed would not have recognized that the inventor was in possession of the invention as claimed in view of the disclosure of the application as filed. The Office Action states a mere naked conclusion that "the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention." That is, the Office Action asserts a conclusion that a person skilled in the art at the time the application was filed would not have recognized that the inventor was in possession of the invention, but the Office Action provides no reasoning to support that conclusion. Indeed, in the face of an original application in this case that is 92 pages in length, including 73 pages of text and 19 sheets of drawings, it would clearly be

impossible for any Examiner to overcome with reason and evidence the presumption of adequate written description. The Office Action, therefore, has not overcome the presumption that Applicants' written description is adequate and as such, Applicants' are entitled to the presumption that the written description is adequate.

Being entitled to the presumption that the written description is adequate, Applicants are under no obligation to comment further. In an effort to move the case along, however, Applicants respectfully submit the following arguments demonstrating that the claims of the present application fully comply with the written description requirement of 35 U.S.C. § 112, first paragraph. To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention. See, e.g., *Moba, B.V. v. Diamond Automation, Inc.*, 325 F.3d 1306, 1319, 66 USPQ2d 1429, 1438 (Fed. Cir. 2003); *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d at 1563, 19 USPQ2d at 1116. An applicant shows possession of the claimed invention by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention. *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997). Applicants respectfully submit that the elements "identifying flight control instructions for flying the UAV on the heading," "means for identifying flight control instructions for flying the UAV on the heading," and "means for transmitting uplink telemetry" as claimed in the present application are described in the specification using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention within the meaning of 35 U.S.C. § 112, first paragraph. Applicants have provided an original application that is 92 pages in length, including 73 pages of text and 19 sheets of drawings, to aid those skilled in the art in understanding Applicants claims. As an example of a description that fully sets forth "identifying flight control instructions for flying the UAV on the heading," consider the following excerpt of Applicants' original specification that begins at page 25, line 10:

The method of FIG. 4 includes identifying (418) flight control instructions for flying the UAV on the heading. Flight control instructions are specific

commands that affect the flight control surfaces of the UAV. That is, instructions to move the flight control surfaces to affect the UAV's flight causing the UAV to turn, climb, descend, and so on. As an aid to further explanation, an exemplary method of identifying flight control instructions for flying on a calculated heading is provided:

- receive new calculated heading from navigation algorithms
- read current heading from downlink telemetry
- if current heading is left of the calculated heading, identify flight control instruction: AILERONS LEFT 30 DEGREES
- if current heading is right of the calculated heading, identify flight control instruction: AILERONS RIGHT 30 DEGREES
- monitor current heading during turn
- when current heading matches calculated heading, identify flight control instruction: FLY STRAIGHT AND LEVEL.

The method of FIG. 4 includes transmitting (420) uplink telemetry, including the flight instructions, through the socket to the UAV. Transmitting (420) the flight control instructions from the remote control device to the UAV may be carried out by use of any data communications protocol, including, for example, transmitting the flight control instructions as form data, URI encoded data, in an HTTP message, a WAP message, an HDML message, or any other data communications protocol message as will occur to those of skill in the art.

The following excerpt of Applicants' original specification is an example of a description that fully sets forth "transmitting uplink telemetry" that begins at page 41, line 12:

The method of Figure 12 also includes transmitting (406) uplink telemetry, including the coordinates of the waypoint, to the UAV through a socket on the remote control device. Transmitting (406) uplink telemetry, including the coordinates of the waypoint, to the UAV through a socket on the remote control device may be carried out by use of any data communications protocol, including, for example, transmitting the coordinates as form data, URI encoded data, in an HTTP message, a WAP message, an HDML message, or any other data communications protocol message as will occur to those of skill in the art. Transmitting uplink telemetry through a socket may be implemented by opening a socket, creating an output stream for the socket, and writing uplink telemetry data

to the output stream, as illustrated, for example, in the following segment of pseudocode:

```
uavSocket = new Socket( "computerAddress", 7);
outStream = new PrintWriter(uavSocket.getOutputStream(), true);
outStream.println(String someUplinkData);
```

This segment opens a socket object named "uavSocket" with an output stream named "outStream." Transmitting uplink telemetry through the socket is accomplished with a call to `outStream.println()` which takes as a call parameter a String object named "someUplinkData."

Each of the above examples evidences the fact that Applicant's patent specification describes the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention. For this reason claims 1, 8, 16, 23, 31, and 38 of the present application are patentable under 35 U.S.C. § 112, first paragraph and Applicants' present application satisfies the written description requirement of 35 U.S.C. § 112, first paragraph.

The Office Action further takes the position that the term "means for," as recited in the limitations "means for identifying flight control instructions for flying the UAV on the heading" and "means for transmitting uplink telemetry," fails the written description requirement under 35 U.S.C. § 112, first paragraph. Applicants respectfully submit that the term "means for" with respect to each means-plus-function limitation is described in the patent specification in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention by describing the corresponding structure of the means-plus-function limitations.

Applicants describe a corresponding structure of the limitation, "means for identifying flight control instructions for flying the UAV on the heading," at page 17, lines 8-22 as:

UAVs according to embodiments of the present invention typically include, not only an aircraft, but also automated computing machinery capable of receiving GPS data, operating telemetry between the UAV and one or more remote control devices, and navigating a UAV among waypoints. Figure 2 is a block diagram of an exemplary UAV showing relations among components of included automated computing machinery.

In Figure 2, UAV (100) includes a processor (164), also typically referred to as a central processing unit or 'CPU.' The processor may be a microprocessor, a programmable control unit, or any other form of processor useful according to the form factor of a particular UAV as will occur to those of skill in the art. Other components of UAV (100) are coupled for data transfer to processor (164) through system bus (100).

UAV (100) includes random access memory or 'RAM' (166). Stored in RAM (166) is an application program (158) that implements inventive methods according to embodiments of the present invention.

That is, a structure that implements the function of identifying flight control instructions is automated computing machinery, including a processor, RAM, and an application program. Applicants describe a corresponding structure of the limitation, "means for transmitting uplink telemetry," at page 26, lines 5-11 as:

The method of Figure 4 includes transmitting (420) uplink telemetry, including the flight instructions, through the socket to the UAV. Transmitting (420) the flight control instructions from the remote control device to the UAV may be carried out by use of any data communications protocol, including, for example, transmitting the flight control instructions as form data, URI encoded data, in an HTTP message, a WAP message, an HDML message, or any other data communications protocol message as will occur to those of skill in the art.

Applicants describe another structure that implements the functions of these "means-plus-function" limitations at page 12, lines 5-27 of Applicants original specification as follows:

The present invention is described to a large extent in this specification in terms of methods for navigating a UAV. Persons skilled in the art, however, will recognize that any computer system that includes suitable programming means for operating in accordance with the disclosed methods also falls well within the scope of the present invention. Suitable programming means include any means for directing a computer system to execute the steps of the method of the invention, including for example, systems included of processing units and arithmetic-logic circuits coupled to computer memory, which systems have the capability of storing in computer memory, which computer memory includes electronic circuits configured to store data and program instructions, programmed steps of the method of the invention for execution by a processing unit.

The invention also may be embodied in a computer program product, such as a diskette or other recording medium, for use with any suitable data processing system. Embodiments of a computer program product may be implemented by use of any recording medium for machine-readable information, including magnetic media, optical media, or other suitable media. Persons skilled in the art will immediately recognize that any computer system having suitable programming means will be capable of executing the steps of the method of the invention as embodied in a program product. Persons skilled in the art will recognize immediately that, although most of the exemplary embodiments described in this specification are oriented to software installed and executing on computer hardware, nevertheless, alternative embodiments implemented as firmware or as hardware are well within the scope of the present invention.

That is, software is a structure that implements the functions of the means-plus-function claims of the present application. As can be seen from the examples of structure recited above, Applicants described the corresponding structure of each means-plus-function limitation using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention. Applicants therefore were clearly in possession of the claimed invention at the time of filing. For the reasons set forth above, claims 1, 8, 16, 23, 31, and 38 therefore satisfy the written description requirement of 35 U.S.C. § 112, first paragraph and the rejections of claims 1, 8, 16, 23, 31, and 38 should be withdrawn. Applicants respectfully request reconsideration of claims 1, 8, 16, 23, 31, and 38.

**Dependent Claims 2-7, 9-15, 17-22, 24-30, 32-37, And 39-45
Are Rejected Under 35 U.S.C. §112, First Paragraph**

The Office Action rejects dependent claims 2-7, 9-15, 17-22, 24-30, 32-37, and 39-45 under 35 U.S.C. § 112, because dependent claims 2-7, 9-15, 17-22, 24-30, 32-37, and 39-45 incorporate the deficiencies of the independent claims from which they depend. As explained above, independent claims 1, 8, 16, 23, 31, and 38 satisfy the written description requirement of 35 U.S.C. § 112, paragraph 1. Dependent claims 2-7, 9-15, 17-22, 24-30, 32-37, and 39-45 therefore incorporate no deficiencies and also comply with 35 U.S.C. §112, first paragraph. Applicants therefore respectfully request the withdrawal of the rejections of claims 2-7, 9-15, 17-22, 24-30, 32-37, and 39-45.

Conclusion

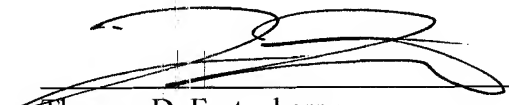
Claims 1-45 stand rejected under 35 U.S.C. §112, first paragraph, for failing to comply with the written description requirement. Applicants respectfully submit that the elements "identifying flight control instructions for flying the UAV on the heading," "means for identifying flight control instructions for flying the UAV on the heading," and "means for transmitting uplink telemetry" are described in Applicants' specification in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention at the time of filing. Applicants therefore respectfully request reconsideration of claims 1-45.

The Commissioner is hereby authorized to charge or credit Deposit Account No. 09-0447 for any fees required or overpaid.

Respectfully submitted,

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